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ABSTRACT

The purpose of this monograph is to heighten awareness about action research for both teachers and administrators involved in California middle level reform efforts. This approach to educational research is a means of developing knowledge through collaboration in a process that improves both student learning and professional autonomy. The monograph is arranged in four sections. The first section is devoted to why action research is one key to genuine educational reform. The second section reviews the how to of undertaking an action research project and presents a proposed 8-step research model useful to teachers and administrators who are studying a problem systematically. An action research example involving two teachers interested in how to improve their students' ability to solve math story problems is included. The third section provides some proposed topics for future action research projects. The final section offers information about the creation of a support network for middle level research. (Contains 21 references.) (LL)

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TEACHER AS ACTION RESEARCHER: THE KEY TO MIDDLE LEVEL REFORM

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**TEACHER AS ACTION RESEARCHER:
THE KEY TO MIDDLE LEVEL
REFORM**

by
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MARCH 1991

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Teacher as Action Researcher: The Key to Middle Level Reform

There is a strong consensus that change, to be positive and successful, must have involvement and ownership by those expected to carry out the change. Educational reforms ranging from site-based management to the California middle level reform are based on teacher and administrator empowerment and participatory decision making. These modest successes require a process where educators gain a sense of ownership. Motivation for lasting reform takes place when change strategies involve educators in experiences that have an expectancy for success. One effective strategy for encouraging and engaging educators is the process of action research.

The purpose of this monograph is to heighten the awareness about action research for teachers and administrators involved in the California middle level reform efforts. These efforts can and are generating an environment that is rich with opportunities for creativity and innovation. This monograph is designed to describe, to motivate, and to provide direction in doing an action research project in any classroom or school, but particularly in the middle level context. There are three main sections of this monograph. The first section is devoted to why action research is one key to genuine educational reform; the second section reviews the how to of undertaking an action research project. The third section provides some proposed topics for future action research projects and information about the creation of a support network for middle level research.

Section I:

Action Research: What is it?

Most educators are familiar with the rigor of the thesis or dissertation. This formalized and traditional research is commonly associated with the university environment and is mainly "outside" directed because the findings extend beyond the immediate group and current situations that may have been studied. The traditional researcher generally leaves implementation of the findings to the practitioner. Traditional research is also an individual effort with the goal of publishing articles about new theory.

Unlike the "theorist" who thinks about the general laws for groups, practitioners involved in action research think about a particular group in a particular setting with the primary goal of finding better ways to do their job. They are primarily interested in improving the educational practices in their particular working environment. Cohen and

Manion (1980) point out that action research is also a participatory endeavor. Practitioners take part directly or indirectly in implementing the research.

Action research takes place when the practitioner initiates and controls the research in conjunction with the day-to-day activities of leading a classroom or school. It is the search for answers to questions relevant to the educator's immediate interests. The action researcher's primary goal is putting the findings immediately into practice. It is a process of increasing understanding of a particular problem, with a particular group, in a particular setting.

Griffiths (1990) cites Kemmis and McTaggart (1982) as researchers who describe action research as combining theory and action. They define action research as:

... the linking of the terms 'action' and 'research' highlights the essential feature of the method: trying out ideas in practice as a means of improvement and as a means of increasing knowledge about the curriculum, teaching and learning. The result is improvement in what happens in the classroom and school, and better articulation and justification of the educational rationale for what goes on ... A distinctive feature of action research is that those affected by planned changes have the primary responsibility for deciding on courses of action which seem likely to lead to improvement, and for evaluating the results of strategies tried out in practice (41).

Action research was first started as a way of applying the scientific method to the study of social science (e.g., group dynamics) and educational problems. The term "action research" was developed by Collier (1945) as a description of collaborative activities where research contributed to the improvement of Indian farming practices. At the Commission of Indian Affairs in the 1930's, Collier instituted participatory activities in which administrators, scientists, and others attempted to improve the effectiveness of social planning. During the 1940's, Lewin (1948), a leader in the study of group dynamics, considered action research as a form of change experiments where community workers were trained to collaborate in order to overcome the sense of isolation in the field and to become more effective in promoting harmonious relationships between different ethnic groups.

With the early success of action research as a process of change, in the 1950's Corey (1953), then Dean of Teachers' College, Columbia University, was instrumental in first applying the principles of action research to education. His efforts were directed at helping teachers and administrators to improve their own practices. He believed that teachers would more likely improve and modify their behavior if they were involved in reflecting on their own efforts. He further believed that action research would be useful if (a) teachers were given sufficient freedom to experiment, (b) trust was built between those

involved, (c) there was rigor in collecting results, and (d) provisions were made for time, materials, advice, and encouragement. Like Collier, Corey believed that action research, done in a collaborative manner, would improve relationships between people since it supported democratic values.

In the 1960's, action research was primarily used in the areas of organizational development and human relations training. During the 1970's, the idea of practitioners doing practical research declined in the United States because it was viewed by some "experts" as less rigorous and too limited in scope to be useful. During the 1980's, action research was instrumental in educational change in Australia and England. Because of some significant progress in other nations, action research has regained importance in the United States as an integral part of teacher training and staff development activities.

Benefits of Action Research

Increasingly, teachers and administrators feel somewhat constrained in an era of growing technology, accountability, and legislative mandates. There is a sense of disengagement, of being powerless to deviate from the curriculum guide or basic text, or being unable to explore and create better ways to teach. Ironically, during a time when there is so much encouragement to find more effective ways of teaching, there is a sense of frustration with the restrictive legislation concerning testing, curriculum standards, and certification. Coupled with the alleged bureaucratization of education is professional isolation and the fear that the promotion of change would be dangerous to one's health and survival in the profession.

Action research may serve as a more effective method of freeing teachers and administrators to explore and to experiment with new and different methods in a positive and constructive manner. It is a process which has been successful in providing a sense of professional empowerment over the methods that were once based on intuition, fads, or curriculum experts. According to findings by Pine (1981), teachers involved in action research became more flexible in their thinking, more open to new ideas, and more able to solve new problems. Bolster (1983) goes on to state that action research has the greatest potential for generating knowledge that is both useful and interesting to teachers.

Simmons (1985) indicates that participants believe that being involved in action research projects has an influence on their: (a) thinking skills, (b) attitudes and efficacy as professional teachers, (c) attitudes toward the need for ongoing professional development, (d) attitudes towards the process of change, (e) willingness to communicate with colleagues, (f) theories of action regarding their work as teachers, and (g) actual classroom practices with children.

Conclusions drawn from studies on teacher researchers by Little (1981) indicate that there are positive changes in the teachers' patterns of collegiality, communication, and networking with other educators in the work place. Little felt that educators need to know why they are doing what they are doing and be able to inform others about their decisions. Little concluded that this process supported the idea that there is no "one best way" to teach and/or lead others. The knowledge of "why" actually empowers practitioners to decide about education. Strickland (1988) found that teachers as researchers depended more on themselves as decision makers and gained more competence as judges of what they know and believe about curriculum and instruction.

Shalaway (1990) found that the benefits of action research were both professionally and personally rewarding. Teachers would improve practice, grow intellectually and professionally, establish rewarding relationships with school and university colleagues, increase their own self-esteem, and create new career opportunities for themselves.

McKernan (1987) concluded that the major benefit occurring from action research was that it solved practical problems rather than generated theories and research reports that were seldom read or implemented. He stated that "it is good research to the extent that it assists practitioners to behave and function more effectively and act more intelligently" (p. 6).

In another study of teachers, Simmons (1985) found that there were professional benefits beyond the actual findings and conclusions of a research project. Practitioners were reading, discussing, thinking, and assessing ideas from related research (i.e., the questions, methodology, theories and hypotheses, findings, and assumptions) and expanding analytical skills. Teachers involved in action research were not as concerned about the outcomes, but rather questions such as:

What does that suggest to us?

Can we think of another way of seeing that?

What other important factors influence this situation?

In still another study, Arth (1985) found that as teachers and administrators assume a greater responsibility for and interest in staff development and the assessment and evaluation of programs, there was a greater need to utilize their talents and experience within the school organization. Smiddy (1981) found that teachers began to realize the value of becoming more involved in the generation and dissemination of knowledge and the sense of ownership in the process. Oja and Pine (1987) concluded from their studies that action research liberates teachers' creative potential, stimulates their abilities to investigate

their own situations, mobilizes human resources to solve educational problems, and is a concurrent process of research and staff development. They stated that:

Collaborative action research provides a confrontation with real problems in the school by conceiving alternatives and testing them out. Practice then becomes the crucible for innovation. Outcomes were that teachers became agents of their own change. They grew personally and professionally, developed skills and competencies which empowered them to solve problems, and improved educational practices. They were no longer static or dependent on others for professional progress. Not only were they more professionally alive, they also felt empowered to make significant changes in their profession. (p.110)

Stenhouse (1975) looked upon action research as a step towards emancipation of the teacher. He believed that action research provides the autonomy necessary to free teachers from paternalism and the role of authority. It is emancipatory because, first, it moves away from the role of authority/expert in favor of a belief that knowledge is provisional and that research strengthens the teacher's judgement and self-directed improvement of practice. Second, and most important, the focus is on curriculum.

In summary, researchers conducting action research are consistent in their findings. Educators involved in change support the results if they meaningfully participate in the process. Perhaps a more significant conclusion is that educators grow professionally and personally. However, like all great ideas, action research is just an idea until effort is extended to put an idea into practice.

Section II

The Process: How is it done?

A problem or question may surface and lead a person to start an action research project at any time. Following are a series of steps which serve as a model to help guide a person through the process of carrying out a project. Like most new ventures, if there is someone to work with, there is a stronger mutual sense of responsibility and commitment. Action research, to be most beneficial, is a group activity. It may involve other teachers, students, parents, or administrators.

Watson (1989) found that conditions most supportive of action research projects include working environments that provide:

1. A forum to share findings and frustrations.
2. Opportunities to educate -- but not to indoctrinate.
3. Time to rethink, resee, and relive the principles that underlie their own activities.

Oberg and McCutcheon (1987) found that teachers would give the following advice to those considering action research projects:

1. Be patient.
2. Be sure you are interested in the project.
3. Make sure colleagues and particularly the principal are supportive of the action research project.
4. See a payoff for your involvement.
5. Be prepared to tolerate changes in the classroom due to the results of the action research findings.
6. Get a perspective on your problem by reading about and observing others.
7. Ask a colleague to observe you and help you articulate a focus on the problem.
8. Narrow the topic by developing a questionnaire as a method of focusing on the problem.
9. Be cautious of using only statistics to support your conclusions.
10. Take heart today, there will be a new problem tomorrow (123-124).

The proposed action research model below suggests a process useful to teachers and administrators who are studying a problem systematically. It guides, corrects, and evaluates their decision using these steps:

1. Identify the issue, interest, or idea.
2. Define the problem.
3. Collect related information.
4. Identify the question.
5. Develop a plan.
6. Collect and summarize the data.
7. Develop the findings and conclusions.
8. Make recommendations.

In summary, the benefit of action research, for both the teacher and the administrator, is a means of developing knowledge through collaboration in a process that improves both student learning and professional autonomy.

The action research example that follows involves two teachers interested in how to improve their students' ability to solve math story problems. Note the eight steps reflecting the proposed model.

1. Identify an issue, area of interest, or idea.

What areas of teaching or administration are interesting, enjoyable to read about, and would likely be the most beneficial and practical in a working situation? Examples might include teaching reading or math, using computers, or employing instructional strategies such as cooperative learning. Our two teachers have focused on math story problems.

2. Define the problem or issue related to your area of interest.

Initially, identifying the problem might appear to be easy. However, the problem statement is one of the most critical steps in the action research process. A suggested approach is to define the problem by describing the differences between the current and the desired situation.

The most common error in stating the problem is being too vague or general. If the problem is too broad, it is difficult to come to closure on the solution. By focusing on a specific aspect of a larger issue, the search for information becomes more directed. Krathwohl (1988) refers to a good problem statement as one that has a balance between a broad vague statement and a trivial statement of no consequence. The problem statement is essential to the rest of the action research. It establishes a framework and sets a direction for the researcher as well as the reader.

Borg (1963) pointed out some common mistakes in developing a problem statement:

1. Putting off getting started and losing the opportunity to gather the data.
2. Accepting the first idea that is thought of or suggested.
3. Selecting a problem that is too vast or vague.
4. Developing fuzzy questions or unanswerable questions.
5. Failing to plan the process of conducting the action research project (p. 38).

Our teachers were concerned that their sixth grade students scored below the national norms on math story problems on the Comprehensive Test of Basic Skills (CTBS). The teachers wanted the students to do as well on story problems as they did on the other parts of the math section of the test. The problem statement in this scenario would be, "Students do not do as well on math story problems as they do on other parts of the math section of the CTBS."

3. Collect related information from journal articles, books, or workshops.

After the problem has been identified, the teacher or administrator is at a major decision point in the action research process. Traditional researchers review the related

literature to gain background on the issue or problem. In action research, the need to do a review of journal articles is desirable, but not critical to the success of the project. Instead of a lengthy review of the literature, it is suggested that a review of a few professional journal articles may be sufficient. The primary goal of action research is to find answers to practical, relevant problems. However, if reviewing a few journal articles is a deterrent to starting the project, action researchers should move directly into the planning stage of the project. It is far more important to start the process than to delay in order to collect information.

The review of current journal articles provides the action researcher with a broad understanding of the problem, ideas of how others have addressed similar problems, and possible methods of explaining the results. It should include citations so that readers can locate information related to the problem statement. Each citation also need to be linked with an explanation of how it relates to the problem. Again, there needs to be a balance struck between too many and too few references. In some rare situations, there may be difficulty in finding information. Claiming that the problem is unique or new is not satisfactory. It is better to review related information than claim that nothing is available, since this may simply indicate that the action researcher has not done his or her homework.

The review of information section concludes with a summary of the information found. It provides a foundation for the development of the action research objectives and alternatives on how to solve the problem.

In our sample project about math, collecting information may involve our teachers in reviewing CTBS results, reviewing the kinds of story problems used in the CTBS, interviewing other teachers about methods used, and reviewing journal articles on teaching strategies or teaching math.

Borg (1963) points out some common errors in reviewing the literature. The action researcher:

1. Carries out a hurried review in order to get started on the project.
2. Relies too heavily upon secondary sources of information.
3. Concentrates on research findings and not on the methods and the measurement process.
4. Overlooks sources other than educational journals, such as newspapers and popular magazines.
5. Fails to relate the search to information related to the problem.
6. Fails to define the problem, includes everything in the problem statement, or narrowly defines the problem and limits the search for related information.

7. Copies bibliographical information incorrectly or copies too much information, indicating that the problem is too vague (p.67).

In our example concerning the lack of ability of students to solve math story problems, the teachers decided to review the California Math Frameworks, the National Council of Teachers of Mathematics Standards, EQUALS: Lawrence Hall of Science, and articles by Marilyn Burns.

4. Identify the questions to be dealt with in the action research project.

After the problem is identified, a series of questions need to be asked. The "questions" step helps to clearly identify the problem, relates information to the problem, and assists in the development of specific issues to be resolved. Questions should be specific. They should be listed in priority so they guide the researcher in addressing the problem and help the reader in following the sequence of the project. Care should be taken that each question relates back to answering the basic problem. It is further suggested that the questions be easily identifiable when reading the project.

In our example about teaching math story problems, the question could be, "What are some of the ways students could score better on math story problems?" However, this might be too vague to guide the researcher in setting up a project. An alternative question might be, "Which method of teaching math story problems is more effective for sixth graders: following the math book sequence or supplementing the math book sequence with math manipulatives?" The specificity of the question will help narrow the factors to consider when developing the plan to find the answers to the problem.

5. Develop a plan or procedure to answer the question.

This step acts as the transition between the beginning problem statement and conclusions at the end. It is a plan of how the project will proceed. The procedures should be in clear and specific terms.

Some common errors in developing procedures are mentioned by Borg (1963):

1. Failing to define the groups to be involved in the action research.
2. Changing the questions to be answered in order to make the collecting of information more convenient for the people involved.
3. Making successive demands on the people involved.
4. Attempting to carry out the project in too short a period of time.
5. Starting to collect data without first conducting a small pilot study or at least testing the procedures (p. 186).

To answer the main questions, one needs to make choices about the methods used to gather data. In our example about the math story problems, the following questions need to be answered:

1. Which teachers and students will be involved in the project?
2. Which classes will use only the math book and which will use the math book with manipulatives?
3. Will the same math book be used in the classes involved in the project?
4. How long will the project last?
5. What pre and post-test scores will be used? (In our example, the CTBS will be used.)
6. How will the results be shared with other teachers?
7. How will parents be informed of the project?

After the plan has been worked out and completed, the data needs to be collected and summarized.

6. Collect and summarize the data.

Some common errors in collecting the data are provided by Borg (1963):

1. Failing to maintain rapport with the people involved in the action research project.
2. Making changes in the plan for administrative convenience.
3. Failing to explain the purposes of the information needed to answer the key questions.
4. Failing to look at alternative ways of measuring the people involved in the project.
5. Selecting measurements that have low validity and reliability.
6. Selecting measurement devices that the person is not qualified to administer and interpret (p. 94).

In our example about teaching math story problems, the teachers may decide to compare the student's fifth grade scores with the sixth grade CTBS scores in math. In order to maintain a degree of consistency, only student CTBS scores for the fifth (pre-test) and sixth grade (post-test) may be used in developing the findings and conclusions.

7. Develop the findings and conclusions.

The payoff for undertaking an action research project is the opportunity to share the findings with your peers. More important is your new knowledge about how to teach or lead more effectively. In our math story problem example, the findings may be that students involved in a combination of math book lessons and math manipulatives did better on the CTBS than students who used only the math book. The teachers may conclude that

a better way to teach students how to solve math story problems would be to use the math book along with math manipulatives.

8. Make Recommendations

Our teachers could recommend that to improve scores on the CTBS math story problem section, students should have opportunities to work with a wide variety of math manipulatives in conjunction with the math book. As a result of their initial findings, they could easily identify a new problem statement and their next action research project. For example, they may be interested in which math manipulatives were more effective in helping students learn how to solve math story problems.

Summary: Math book vs math book and math manipulatives

Our sixth grade teachers were concerned about students not grasping and retaining the basic concepts of solving math story problems. Students appeared to know the basic facts, but were unable to apply those facts in practical situations. The math books didn't require the students to apply classroom learning. For example, the teachers wanted students to demonstrate their learning by accurately measuring a playground, finding the area of a classroom, calculating the mileage to and from school, and doing other two-and-three step math story problems. They also wanted to know if students could score as well or better on the CTBS if, in place of doing every page in the math book, they used a math manipulative curriculum supplement. In summary, the action research model project used these steps:

- 1. Identify area of interest:** The ability of students to successfully solve math story problems.
- 2. Define the problem:** "Students do not do as well on math story problems as they do on other parts of the math section of the CTBS."
- 3. Collect related information:** California Math Frameworks, the National Council of Teachers of Mathematics Standards, EQUALS: Lawrence Hall of Science, and articles by Marilyn Burns.
- 4. Identify the question:** Which method of teaching math story problems is more effective for sixth graders: following the math book sequence or supplementing the math book sequence with a variety of math manipulatives?
- 5. Develop a plan:** Who will be involved in answering the question about teaching math story problems? How long will the project take? Who will collect the results? How will the results be shared with others?

6. **Collect and summarize the data:** After the test data is collected, the original question about teaching math story problems is addressed. Which method of teaching about math story problems is more effective for sixth graders: using the math book sequence or using the math book and a variety of math manipulatives?
7. **Develop the findings, conclusions, and recommendations.**
8. **Make recommendations:** Consider the new areas of interest which surfaced as a result of this action research project.

Section III

Suggested List of Action Research Issues for Middle Level Teachers and Administrators

Proposed topics for research for middle level educators are divided into three groups. The first group uses the student scores on achievement tests. These scores provide an acceptable measuring device which compares differences between groups before and after the project. Test scores are also: (a) relatively easy data to access, (b) fairly well understood by other teachers, and (c) of interest to other teachers, parents, and administrators. The suggested topics in this group center around problem statements concerning the impact of the school's organizational practices and curriculum.

Organization:

- Daily Schedule: core vs. departmentalization
- Grade Organization: K-12 vs. 6-8
- Teacher Sharing: common planning vs. random planning time
- Teacher Training: elementary vs. secondary emphasis
- Paraprofessionals: no paraprofessionals vs. two hours per day
- Parent conferences: arena parent conferences vs. report cards.

Curriculum:

- Math Activities: using vs. not using calculators
- Writing Skills: peer vs. teacher corrected papers
- Writing Skills: word processing vs. hand written compositions
- Science: science laboratory vs. computer simulation
- Testing Frequency: daily vs. weekly vs. monthly testing.

The second group of topics deals with scores on a school climate survey. These scores provide data about the students' perceptions of what is happening or not happening in the school. A teacher might create a survey to measure school climate or use

a short school climate survey found in a review of journal articles. School climate surveys are readily available and can be given in a short time. However, care must be taken to minimize ambiguity of terms used to describe school climate.

Related to a measure of school climate:

Student Participation: extracurricular vs. intramural activities

Teacher Sharing: common planning vs. random planning time

Student Advising: school counselors vs. teacher advisors

Daily Schedule: core vs. subject departmentalization

Orientation: students visiting their new school vs. orientation sessions after school starts.

The third group of topics relate to **change strategies**. An administrator may be interested in undertaking an action research project on different methods of advising students, inducting new teachers or communicating school news to parents.

Related to rate of adoption of staff development programs (innovations):

Presenters: outside experts vs. mentor teacher presenters

Incentives: volunteer attendance vs. paid to attend workshops

Section IV

Middle Level Research Network

In 1989, educators interested in conducting research projects related to middle level education formed a California-based research network sponsored by the California League of Middle Schools (CLMS). The network is made up of teachers, administrators, university professors, Farwest Regional Laboratory staff, representatives of the California State Department of Education, and research consultants who are particularly interested in furthering the reform of middle level education. For additional information about possible collaborative action research projects, contact the California Middle Level Research Network at the following address: 18012 Cowan, Suite 230, Irvine, CA 92714.

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